1. Exposure Data

1.1 Identification of the agent

1.1.1 Nomenclature

Chem. Abstr. Serv. Reg. No.: 1071-83-6 (acid), also relevant:

38 641-94-0 (glyphosate-isopropylamine salt)

40 465-66-5 (monoammonium salt)

69 254-40-6 (diammonium salt)

114 370-14-8 (unspecified ammonium salt)

34 494-03-6 (glyphosate-sodium)

81 591-87-3 (glyphosate-trimesium)

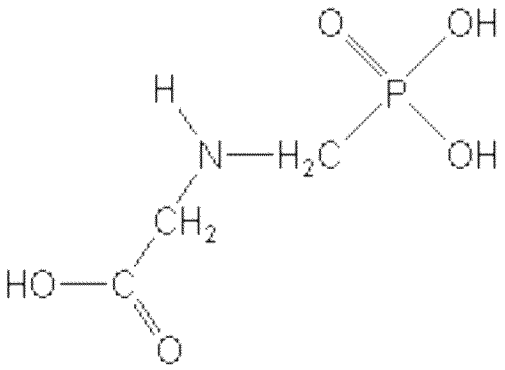
Chem. Abstr. Name: N-(phosphonomethyl)glycine

Preferred IUPAC Name: N/A

Synonyms: glyiphosate; glyphosate; glyphosate hydrochloride; glyphosate [calcium, copper (2+), dilithium, disodium, magnesium, monoammonium, monopotassium, monosodium, sodium, or zinc] salt

Tradenames: Glyphosate products are sold worldwide under several trade names, including Abundit Extra; Credit; Extreme; Glifonox; Glyphogan; Ground-Up; Rodeo; Roundup; Touchdown; Tragli; Wipe Out; Yerbimat (Bravo Ag) (Farm Chemicals International, 2014)

1.1.2 Structural and molecular formulae and relative molecular mass



http://www.alanwood.net/pesticides/glyphosate.html

Molecular Formula C3H8NO5P

Relative molecular mass 169.073 082 g/mol

Additional chemical structure information is available in the PubChem Compound database (NCBI, 2015).

1.1.3 Chemical and physical properties of the pure substance

Description: Glyphosate acid is a colourless, odourless crystalline solid. It is formulated as a salt consisting of the deprotonated acid of glyphosate and a cation (isopropylamine, ammonium, or sodium), with more than one salt in some formulations. The isopropylamine salt is most commonly used in formulated products (FAO, 2010; Henderson *et al*., 2010; IPCS, 1994).

Solubility: The acid is of medium solubility at 11.6 g/L in water (at 25 °C) and insoluble in common organic solvents such as acetone, ethanol, and xylene; the alkali-metal and amine salts are readily soluble in water (Tomlin, 2000).

Volatility: Vapour pressure, 9.8X10–8 mm Hg at 25 °C (negligible) (Tomlin, 2000);

Stability: Glyphosate is stable to hydrolysis in the range of pH 5 to pH 9 and relatively stable to photodegradation (FAO, 2000). Glyphosate is not readily hydrolysed or oxidized in the field

(Rueppel *et al.* 1977). Decomposes on heating, producing toxic fumes including nitrogen oxides and phosphorus oxides (IPCS, 2005).

Reactivity: Attacks iron and galvanized steel (IPCS, 2005).

Octanol/water partition coefficient (P): log P, < –3.2 (pH 2–5, 20 °C) (OECD method 107) (Tomlin, 2000).

Henry's Law: < 2.1×10^{-7} Pa m^3 mol^{-1} (Tomlin, 2000).

Conversion factor: mg/m3 = 6.92 × ppm, assuming normal temperature (25 °C) and pressure (101 kPa).

1.1.4 Technical products and impurities

Glyphosate is formulated as an isopropylamine, ammonium, or sodium salt in water soluble concentrates and water soluble granules. Relevant impurities in glyphosate technical concentrates are formaldehyde (max. 1.3 g/kg), *N*-Nitrosoglyphosate (max 1 mg/kg), and *N*-nitroso-*N*-phosphonomethylglycine (FAO. 2000). Surfactants and sulfuric and phosphoric acids may be added to formulations of glyphosate, with type and concentration differing by formulation. A common surfactant present in the formulation sold as Roundup is polyoxyethylene amine (POEA)(IPCS, 1994).

References

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